

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 Claim 1 (original): A method of operating an apparatus
2 to scale soft input values obtained, from a signal
3 transmitted through a communications channel, as part of
4 a decoding process, the method comprising:

5 computing a current scaling factor as a function of
6 a preselected channel quality value and at least one of
7 said soft values, said preselected channel quality value
8 being independent of actual channel conditions at the
9 time said signal was transmitted; and

10 scaling one of said soft values using said computed
11 current scaling factor to produce a scaled soft value.

1 Claim 2 (original): The method of claim 1, wherein a
2 plurality of soft value distributions are possible, a
3 subset of possible soft value distributions corresponding
4 to said preselected channel quality value while other
5 possible distributions correspond to other channel
6 quality values, said step of computing a current scaling
7 factor including:

8 determining a scaling factor which, when applied to
9 said received soft values, produces a soft value
10 distribution in said subset of soft value distributions
11 corresponding to said preselected channel quality value.

1 Claim 3 (original): The method of claim 2, wherein
2 determining a scaling factor includes:

3 computing from at least some of said soft input
4 values a plurality of channel quality values, each

5 channel quality value corresponding to a different scale
6 factor.

1 Claim 4 (original): The method of claim 3, further
2 comprising:

3 interpolating between at least two of said plurality
4 of channel quality values to produce an interpolated
5 value; and

6 determining said current scale factor as a function
7 of the interpolated quality value.

1 Claim 5 (original): The method of claim 1, wherein said
2 preselected channel quality value is a channel capacity
3 value.

1 Claim 6 (original): The method of claim 3, wherein
2 computing said scaling factor includes;

3 determining a current channel quality function from
4 a first scale factor.

1 Claim 7 (original): The method of claim 6, further
2 comprising:

3 solving said function to determine a scale factor which,
4 when applied to said function given said at least some
5 soft input values, produces said target channel quality,
6 said determined scale factor being used as said current
7 scale factor.

1 Claim 8 (original): The method of claim 2, wherein determining
2 the current scale factor is part of a iterative process that
3 includes:

4 updating the current scale factor as a function of a soft
5 value scaled by the current scale factor being updated.

1 Claim 9 (original): The method of claim 8, wherein said
2 updating includes:

3 comparing a channel quality value corresponding to the
4 scaled soft value to the target quality value to determine a
5 difference between the target quality value and the
6 corresponding quality value; and

7 adjusting the scaling factor as a function of said
8 determined difference.

1 Claim 10 (original): The method of claim 9, wherein said scale
2 factor is adjusted in a direction which reduces subsequent
3 differences between the channel quality value corresponding to a
4 subsequently processed soft value and said target channel
5 quality value.

1 Claim 11 (original): The method of claim 9, wherein scale
2 factor adjustments are made within a range extending between a
3 maximum permitted scaling value and a minimum permitted scaling
4 value, individual scale factor adjustments being no larger than
5 a maximum adjustment step size of 2% of the maximum permitted
6 scaling value.

1 Claim 12 (original): The method of claim 1, wherein said
2 preselected channel quality value is a value corresponding to a
3 quality region that is within but near the edge of an acceptable
4 channel quality region

1 Claim 13 (original): The method of claim 1, wherein said
2 decoding process includes at least one of a low density parity
3 check decoding operation and a turbo code decoding operation.

1 Claim 14 (original): An apparatus for determining a factor to
2 be used to scale soft input values obtained, from a signal
3 transmitted through a communications channel, comprising:
4 a receiver for receiving a signal transmitted through a
5 communications channel;
6 means for generating soft input values from said received
7 signal;
8 memory for storing a preselected channel quality value,
9 said preselected channel quality value being independent of
10 actual channel conditions at the time said signal was
11 transmitted; and
12 means for computing a scaling factor as a function of said
13 preselected channel quality value and at least one of soft input
14 values.

1 Claim 15 (original): The apparatus of claim 14, wherein said
2 preselected channel quality value is a value corresponding to a
3 quality region that is near the edge of an acceptable channel
4 quality region.

1 Claim 16 (original): The apparatus of claim 15, wherein said
2 preselected channel quality value is a channel capacity value.

1 Claim 17 (original): The apparatus of claim 14, wherein a
2 plurality of soft value distributions are possible, a subset of
3 possible soft value distributions corresponding to said
4 preselected channel quality value while other possible
5 distributions correspond to other channel quality values, said
6 means for computing a scaling factor including:
7 means for determining a scaling factor which, when applied
8 to said received soft values, produces a soft value distribution

9 in said subset of soft value distributions corresponding to said
10 preselected channel quality value.

1 Claim 18 (original): The apparatus of claim 17, wherein said
2 means for determining a scaling factor includes:
3 means for computing from at least some of said soft input
4 values a plurality of channel quality values, each channel
5 quality value corresponding to a different scale factor.

1 Claim 19 (original): The apparatus of claim 18, further
2 comprising:
3 means for interpolating between at least two of said
4 plurality of channel quality values to produce an interpolated
5 value; and
6 means for determining said scale factor as a function of
7 the interpolated quality value.

1 Claim 20 (original): The apparatus of claim 19, wherein said
2 means for computing and means for interpolating each include
3 computer instructions for controlling a processor to implement
4 at least a portion of said computing and interpolating
5 operations.

1 Claim 21 (original): The apparatus of claim 18, wherein said
2 means for computing said scaling factor includes:
3 means for determining a channel quality function from a
4 first scale factor; and
5 means for solving said function to determine a scale factor
6 which, when applied to said function given said at least some
7 soft input values, produces said target channel quality, said
8 determined scale factor being used as said current scale factor.

1 Claim 22 (original): The apparatus of claim 17, wherein said
2 means for determining the current scale factor performs an
3 interactive process, said apparatus further including:

4 a control loop for updating the current scale factor as a
5 function of a soft value scaled by the current scale factor
6 being updated.

1 Claim 23 (original): The apparatus of claim 22, wherein said
2 control loop includes:

3 a comparator for comparing a channel quality value
4 corresponding to the scaled soft value to the target quality
5 value to determine a difference between the target quality value
6 and the corresponding quality value; and

7 means for adjusting the scaling factor as a function of
8 said determined difference.

1 Claim 24 (original): A machine readable medium comprising;
2 machine executable instructions for controlling a machine
3 to perform the steps of:

4 i) computing a current scaling factor as a function of
5 a preselected channel quality value and at least one
6 soft input value obtained, from a signal transmitted
7 through a communications channel, said preselected
8 channel quality value being independent of actual
9 channel conditions at the time said signal was
10 transmitted; and

11 ii) scaling said at least one said soft value using
12 said computed current scaling factor to produce a
13 scaled soft value.

1 Claim 25 (currently amended): The machine readable medium of
2 claim 24, further comprising:

3 said preselected channel quality value, said preselected
4 channel quality value being a value corresponding to a quality
5 region that is near the edge of an acceptable channel quality
6 region.

1 Claim 26 (original): The machine readable medium of claim 25,
2 wherein said channel quality value is a communications channel
3 capacity value.